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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/334,646 06/17/99 YAMAZAKI

S 0756-1984

MMC2/1113  
SIXBEY FRIEDMAN LEEDOM & FERGUSON PC  
8180 GREENSBORO DRIVE SUITE 800  
MCLEAN VA 22102

EXAMINER

HU, S

ART UNIT

PAPER NUMBER

2811

DATE MAILED:

11/13/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.

09/334,646

Applicant(s)

Yamazaki et al.

Examiner

Shouxiang Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1) ☒ Responsive to communication(s) filed on Oct 1, 2001

2a) ☐ This action is FINAL.

2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

## Disposition of Claims

4) ☒ Claim(s) 1-3, 8, 11-14, 16-19, 32-34, 38-43, 52, 53, 58-60, 65, 71-73, and 75-8 is/are pending in the application

4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration

5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

6) ☒ Claim(s) 1-3, 8, 11-14, 16-19, 32-34, 38-43, 52, 53, 58-60, 65, 71-73, and 75-81 is/are rejected.

7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.

8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirements

## Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☒ All b) ☐ Some\* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☒ Certified copies of the priority documents have been received in Application No. 08/513,090

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

19) ☐ Notice of Informal Patent Application (PTO-152)

17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 23

20) ☐ Other: \_\_\_\_\_

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### **DETAILED ACTION**

1. This application is a divisional one of U.S. Application No. 08/938,310, filed on September 26, 1997, now U.S. Patent 5,959,313, which itself is a divisional of U.S. Application No. 08/513,090, filed on August 9, 1995, now U.S. Patent 5,731,613.

#### ***Election/Restriction and Claim Cancellation***

2. Claims 82-99 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention and being canceled by Applicant, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 22. In addition, claims 6, 26-28, 48, 49, 63 and 74 are canceled in Amendment E (Paper No. 16) filed by Applicant on April 13, 2001.

Accordingly, claims 1-3, 8, 11-14, 16-19, 32-34, 38-43, 52, 53, 58-60, 65, 71-73 and 75-81 are currently active.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) a patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 1-3, 8, 11-14, 16-19, 32-34, 38-43, 52, 53, 58-60, 65, 71-73 and 75-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. ("Zhang"; 5,403,772) in view of Kuribayashi et al. (Kuribayashi"; 5,233,447) and/or Matsueda (5,173,792).

Zhang discloses an active matrix type LC display device (Figs. 1-8A, particularly, Fig. 8A), comprising: a pixel matrix portion (104) and a peripheral driver circuit portion (101 and 102), a thin film transistors (TFT) in the driver circuit portion having channel forming region in one of the separate semiconductor layers (11a and 11b) provided on an insulating surface, wherein the channel forming region is provided in a region which can be regarded as being effectively monocrystalline silicon (see col. 6, lines 13-15); and, the channel forming region contains impurities (a type of point defects) of carbon, nitrogen and oxygen at a concentration less than  $10^{18} \text{ cm}^{-3}$ , which meets the limitation of each channel forming region "containing carbon and nitrogen at a concentration of  $5 \times 10^{18} \text{ cm}^{-3}$  or less, respectively, and containing oxygen at a concentration of  $5 \times 10^{19} \text{ cm}^{-3}$  or less" recited in the claimed invention.

It is noted that, since the channel forming region in Zhang is formed with a method which is substantially the same as the one used in the claimed invention, the method used in Zhang is regarded as being inherently capable of forming the channel forming region having no linear defects or surface defects. In addition, one of ordinary skill in the art would readily recognize that it is always desirable to form the channel

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forming region having no linear defects or surface defects for achieving good channel performance.

Although Zhang does not expressly disclose that the display device further comprises a buffer circuit in the driver circuit, one of ordinary skill in the art would readily recognize that such a buffer circuit is normally preferably required for achieving desired driving output, as evidenced in Kuribayashi (see the buffer circuit (81) in Fig. 8; also see col. 8, lines 56-66). It is also evidenced in Kuribayashi (see Fig. 19) that an active matrix type display device commonly further comprises a memory, a decode and a display system for maintaining its basic display functionality.

Zhang does not expressly disclose that the peripheral driver circuit portion comprises at least two TFTs connected in parallel. However, Matsueda discloses an active matrix type LC display device (Figs. 1-12, particularly, Fig. 7), comprising: at least two TFTs ( 100A and 100B) provided on the surface of an insulating layer (110); a common gate wire (102); a common source wire ( $X_m$ ); a common drain wire (101), wherein the channel forming regions of the parallel-connected transistors are provided in separate semiconductor layers respectively. Matsueda teaches that the reliability of a basic control element comprising two or more parallel-connected TFTs is better than that of a basic control element comprising a single TFT.

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the parallel-connected TFTs of Matsueda into

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the driver circuit in the display device of Zhang with the driver circuit including a buffer circuit, per the teaching of Kuribayashi, so that a display device with good reliability and desired driving output would be obtained.

Regarding claims 11-14, 16-19 and 32-34, as mentioned above, an active matrix type display device commonly further comprises a memory, a decode and a display system for maintaining its basic display functionality.

Regarding claims 38-43, 52, 53, 58-60 and 65, it is noted that it is well known in the art that the carrier mobility and crystallization quality are strongly correlated with the Raman spectrum width ratio and intensity ratio, as evidenced in the prior art such as in Fig. 3 of Yamazaki et al. (5,608,232), which shows that the Raman spectrum width ratio of  $W/W_0$  is 2.0 or less; and, that the Raman spectrum intensity ratio of  $I/I_0$  is about 0.8 or more.

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to make the device collectively taught by Zhang, Kuribayashi and Matsueda with the Raman spectrum width ratio of  $W/W_0$  being 2.0 or less and the Raman spectrum intensity ratio of  $I/I_0$  being about 0.8 or more, so that improved display device performance with high-mobility TFTs would be achieved.

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***Response to Arguments***

5. Applicant's arguments with respect to claims 1-3, 8, 11-14, 16-19, 32-34, 38-43, 52, 53, 58-60, 65, 71-73 and 75 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

6. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 or 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ***Shouxiang Hu*** whose telephone number is **(703) 306-5729**. The examiner can normally be reached on Monday through Thursday from 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ***Tom Thomas***, can be reached on **(703) 308-2772**. The appropriate fax

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phone number for the organization where this application or proceeding is assigned is  
**(703) 308-7724.**

Any inquiry of a general nature or relating to the status of this application should  
be directed to the **Technology Center Receptionists** whose telephone number is  
**(703) 308-0956.**

A handwritten signature in black ink, appearing to read 'Shouxiang Hu', with a stylized, cursive script.

Shouxiang Hu

November 6, 2001